

CLAIMS

1. An item-extraction mechanism for a self-service merchandise vending machine comprising:
 - a lifting-arm (1),
 - a shelf-stop (2),
 - an item-to-be-extracted (3a),
 - and a shelf (4);

wherein the shelf-stop (2) is located at the front end of the shelf (4); the item-to-be extracted (3a) is located on the front-most part of the shelf (4) but behind the shelf-stop (2); and the lifting-arm (1) is located near the shelf-stop (2) in such a fashion that the lifting-arm (1) may be able to lift up the item-to-be-extracted (3a); whereby, in the item extraction process, the item-to-be-extracted (3a) is lifted up by the lifting-item (1) and is toppled over the shelf-stop (2) and drop.
2. The invention according to claim 1, wherein the item-to-be-extracted (3a) is under a forwardly pressure so that it is toppled over the shelf-stop (2) more readily during the item extraction process.
3. The invention according to claim 2, wherein the forwardly pressure is increased by a pushing-weight (7a).

4. The invention according to claim 3, wherein the pushing-weight (18) has a wedged front surface (18).
5. The invention according to claim 1, wherein the shelf (4) is tilted so as to exert a forwardly gravity force on the item-to-be-extracted (3a).
6. The invention according to claim 1, wherein the front of the shelf (4) is open-ended so that the lifting-arm (1) may swing through the shelf –stop (2).
7. The invention according to claim 1, wherein the lifting-arm (1) makes a 360 degree full circle in its item-extraction process.
8. The invention according to claim 1, wherein the item-to-be-extracted (3a) is a under-sized product enclosed in an enclosure (11a) that is large enough for a reliable extraction process.
9. The invention according to claim 1, wherein the item-to-be-extracted (3a) is accompanied by a spacer (12a) so as to ensure a reliable extraction process.
10. The invention according to claim 1, wherein the shelf-stop (2) is fabricated by bending up the ends of the wire members (2m, 2n) of a conventional shelf.

11. The invention according to claim 1, wherein the item-to-be-extracted (19a) is substantially elongated, and the shelf-stop (2) assigned to the elongated item-to-be-extracted (19a) comprises two upright members (2m, 2n) positioned close to the ends of the elongated item-to-be-extracted (19a).

12. An item-extraction mechanism for a self-service merchandise vending machine comprising;

a lifting-arm (1),

a shelf-stop (2),

an item-to-be-extracted (3a),

a shelf (4)

and a support rail (9);

wherein the shelf-stop (2) is located at the front end of the shelf (4); the item-to-be-extracted (3a) is located on the front-most part of the shelf (4) but behind the shelf-stop (2); the support rail (9) is positioned along the direction of the item extraction; the item-to-be-extracted (3a) leans on the support rail (9) to maintain a proper and stable orientation; and the lifting-arm (1) is located near the shelf-stop (2) in such a fashion that the lifting-arm (1) may be able to lift up the item-to-be-extracted (3a); whereby, in the item extraction process, the item-to-be-extracted (3a) is lifted up by the lifting-arm (1) and is toppled over the shelf-stop (2) and drop.

13. A self-service merchandise vending machine comprising an array of vending columns (A, B, ...) with one common lifting-arm (1);

each vending column comprising;

a shelf-stop (2),

an item-to-be-extracted (3a);

wherein the lifting-arm (1) is moveable from one vending column (A) to the next (B) across the display front; the shelf-stop (2) is located at the front end of the shelf (4); the item-to-be-extracted (3a) is located on the front-most part of the shelf (4) but behind the shelf-stop (2); and the lifting-arm (1) is located near the shelf-stop (2) in such a fashion that the lifting-arm (1) may be able to lift up the item-to-be-extracted (3a); whereby, in the item extraction process, the lifting-arm (1) is moved to a desired vending column (A), and then the item-to-be-extracted (3a) is lifted up by the lifting-arm (1) and is toppled over the shelf-stop (2) and drop.

14. The invention according to claim 13, wherein the shelf-stop (2a) of a vending column (B) with thinner items (6a, 6b, ...) is located behind the shelf-stop (2b) of other column (A) with thicker items (3a, 3b, ...) so that the lifting-rod (1) reaches only the front-most item in the item extraction process regardless of the thickness of the items to be extracted.

15. The invention according to claim 13, wherein the vending columns (A, B, ...) are separated by column dividers (5, 5a, 5b, ...).